UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
ONE CONGRESS STREET
SUITE 1100 (HBO)
BOSTON, MASSACHUSETTS 02114-2023

MEMORANDUM

DATE: October 10, 2002

SUBJ: Response to Recommendations from the National Remedy Review Board
Beede Waste Oil Superfund Site, Plaistow, New Hampshire

FROM: Jim DiLorenzo, Remedial Project Manager

THRU: Mike Jasinski, NH/RI Chief
Office of Site Remediation and Restoration

Don Berger, Region I Representative
National Remedy Review Board

TO: Bruce K. Means, Chair
National Remedy Review Board

EPA Region I has reviewed the recommendations of the National Remedy Review Board (NRRB) for the Beede Waste Oil Superfund Site (Site), as were documented in a memorandum dated December 21, 2000. Region I agrees with the cited recommendations and has incorporated them into completion of the Feasibility Study and Proposed Plan. In order to fully address the NRRB's recommendations, it was first necessary to complete the Proposed Plan process.

The cleanup recommendation included in the Proposed Plan did not change significantly in overall scope or cost as a result of the NRRB's recommendations, however, resulting clarifications will allow a more accurate estimate of response costs and additional pre-design studies may reduce the extent of treatment necessary, potentially resulting in significant cost savings.

The NRRB's recommendations are in ***bold italics*** followed by the regional response.

1. ***The ARARs table provided in the site package was over-inclusive and was not alternative-specific. The board understands that the ARARs analysis presented in this package is preliminary and has not been fully reviewed by the region/state. The board questions the applicability (and/or inclusion) of some of the ARARs and TBCs (e.g., MCLGs are not consistent with stated remediation goals) and was not able to evaluate the ARARs***

accurately. The board encourages the region/state to continue their process of ARAR determination and include the appropriate ARARs analysis in the site decision documents

The ARAR's tables presented in the NRRB package prepared by Region I were preliminary and did not benefit from EPA or State legal review. The remedial investigation and feasibility study were performed as a State-Lead effort under a Cooperative Agreement with Region I. As such, the State's contractor had no prior experience with developing ARARs. The State's contractor was instructed to include a broad-base of ARARs in their initial compilation based, in part, on their review of other recent Records of Decision in New Hampshire. This initial compilation is what was included in the package. In order for the NRRB to have the opportunity to provide meaningful input into the proposed cleanup decision, Region I felt it prudent to proceed with the NRRB presentation despite the initial stage of ARARs development.

A comprehensive ARARs review has been completed by Region I which included, (1) a review and clarification of proposed ARARs by the Region I case attorney, (2) an evaluation of ARAR consistency with recommended remediation goals and ability to meet stated ARARs by the Region I RPM and State's contractor, (3) an evaluation of recommended ARARs by the State attorney and RPM and (4) a review of final ARARs by the Region I ARARs tribunal. A final review of the recommended ARARs by OERR will occur as part of the formal Draft Record of Decision review process. This approach should ensure the inclusion and application of appropriate chemical, location and action-specific ARARs in a nationally consistent manner.

2. ***The region/state proposes to use a visual standard to define (and address) a significant sediment contamination source in nearby Kelley Brook. However, the package was unclear about which contaminants and levels drive the need for action, or how they relate to the visual standard. The board recommends that the site decision documents clearly present both the bases for action in this area and the appropriate remediation goals that will ensure an acceptable residual risk for the Kelly Brook sediments.***

Kelley Brook crosses the north and northeast portions of the Site and flows into the Little River about 3,000 feet downstream. The Little River discharges into the Merrimack River about 6 miles southeast of the Site. An oil break-out area was present along a 300 foot length of the southern bank of Kelley Brook. This area has received discharge from a subsurface plume of light non-aqueous phased liquids. The discharge has been eliminated by a separate EPA removal action, however sediments in this area remain oil-saturated and are a source of surface water contamination.

Through the remedial investigation, surface water and sediment samples were collected from up stream, cross stream and down stream portions of Kelley Brook. Twenty-seven sediment samples were analyzed for VOCs, SVOCs, PAHs, pesticides, metals and PCBs. Eleven surface water samples were analyzed for similar parameters. Results indicate elevated levels

of PCBs, PAHs, lead and several other inorganic compounds at various locations throughout Kelley Brook. Several PAHs and inorganic compounds are associated with non site-related upstream sources. Sediments in the oil break-out area (defined as sediment samples OS-5, 5A, 5B, 6 and 6A) contain the highest level of PCBs in Kelley Brook and are clearly associated with the LNAPL plume. Excavation of sediment from the oil break-out area is recommended to, (1) reduce ongoing seepage to surface water, (2) reduce contact and ingestion risks to target species (robin and shrew) and (3) reduce contact and ingestion risks to a child wader and adult fisherperson. The hazard quotient for the robin will be reduced from 71 to 54 and for the shrew will be reduced from 30 to 15. The hazard index for the child wader will be reduced from 3 to 0.9. Reductions in other pathways are noted but are not reduced to levels within the acceptable risk range. This is because human health risks are cumulative and, in this case, are driven substantially by exposure to surface water. Although surface water quality will improve as a direct result of sediments removal, it is not possible to quantify the extent of improvement.

3. ***Based on the site review package, the preferred alternative relies on Monitored Natural Attenuation (MNA) to address the distillation source plume, the SWRP1 source plume, and a portion of the UST/AST/SWRP2 plume. However, the package does not provide a clear rationale to support use of MNA to address these plumes. For all areas where MNA is proposed, the region/state should clearly describe the extent and stability of the plumes as well as the contaminant degradation and rate mechanisms expected consistent with OSWER Directive 9200.4-17, "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites" (12/1/97). In addition, the method for evaluating MNA effectiveness should be described in the decision documents (e.g., an appropriate monitoring plan which would include consideration of partial breakdown products, appropriate remediation goals, and a discussion of reasonable time frames, etc.)***

   OSWER Directive 9200.4-17P, dated April 21, 1999 (the final version of the interim document referenced by the NRRB), provides a list of important factors tom considered in the evaluation of the applicability of MNA for soil or groundwater at a given site, including:

   - Can the contaminants present be effectively remediated by natural attenuation processes;
   - The stability of the contaminant plume (i.e., spatial extent, contaminant concentrations) and the potential for conditions that influence plume stability to change over time;
   - Potential impact to human health, drinking water supplies, surface water, ecosystems, sediments, air or other environmental resources if MNA is selected;
   - Current and projected future demand for the impacted resource for the time frame over which MNA is anticipated to be ongoing;
   - component of the remedy; and
   - The reliability of institutional controls (e.g., groundwater management zone [GMZ]) in protecting potential receptors while MNA is ongoing.

These factors were considered as part of the development of the proposed cleanup action. Considerable discussion/analysis within the FS Report and data presented in the Remedial Investigation (RI) Report support the proposed limited use of MNA. Natural attenuation of selected source areas/contaminated groundwater plumes is proposed as a component of several of the active remedial alternatives. These source areas/plumes include the solvent distillation unit source/plume, SWRP 1 source/plume and that portion of the UST/AST/SWRP 2 plume which discharges to Kelley Brook. Selected points supporting MNA for these plumes include:

- With the implementation of the proposed active source control measures, these sources/plumes do not present unacceptable levels of risk to human or ecological receptors from direct contact;
- Based on available data, the sources/plumes for which MNA is proposed do not impact drinking water supply wells and are not anticipated to impact drinking water supply wells in the future;
- These plumes have apparently attained 'steady state' configurations, with plumes maintaining relatively constant size or shrinking with time; and
- The plumes are predominantly composed of dissolved aromatic and chlorinated volatile organic compounds (AVOCs and CVOCs, respectively), and petroleum hydrocarbons (PHCs), all of which have been demonstrated to be amenable to natural attenuation, and to biodegradation in particular.

Natural attenuation of these plumes will be closely monitored, including sampling of approximately 50 monitoring wells semi-annually, with the groundwater samples analyzed for VOCs (i.e., including parent CVOCs and their biodegradation products [i.e., daughter CVOCs]), pesticides, and natural attenuation parameters (e.g., nitrate, sulfate, methane, soluble iron, soluble manganese, alkalinity, chloride, TOC, ethanes, and ethenes)

4. ***The board notes that the region/state have used background concentrations for setting selected remediation goals (e.g., As and Cr). However, it is unclear how these levels were determined and whether these levels are sufficiently distinguishable to avoid excavating non-contaminated soils. The Board recommends that the region/state review the remedial goals based on background concentrations and adjust those goals accordingly to avoid unnecessary cleanup costs.***

Background concentrations are those that would be present in the absence of the Site. Metals are naturally occurring chemical elements which are commonly present in background samples at detectable concentrations. Concentrations of background metals frequently exceed risk-based concentrations, which would otherwise be established as the appropriate remediation goal.

At Beede, Site-specific background concentrations for metals in soil were jointly determined by the human health and ecological risk assessors as part of the remedial investigation.

Concentrations were established based on the 95th percentile of site-specific soil data considered to represent background conditions and state-wide background concentrations as established in the New Hampshire Department of Environmental Service's "Contaminated Sites Risk Characterization and Management Policy (RCMP)." For arsenic at Beede, background concentrations were established at 11 mg/kg based on the 95th percentile and 12 mg/kg based on the RCMP and the risk-based concentration is 0.28 mg/kg. For chromium at Beede, background concentrations were established at 33 mg/kg based on the 95th percentile and 21 mg/kg based on the RCMP and the risk based concentration is 6.3 mg/kg. Arsenic and chromium contamination, which exceed established background concentrations, are co-located with polychlorinated biphenyls (PCBs), polyaromatic hydrocarbons (PAHs) and lead. PCBs, PAHs and lead are the drivers of soil remediation based on their relative toxicity and prevalence to other contaminants at Beede. Therefore, the proposed soil removal/treatment is defined by the extent of PCBs, PAHs and/or lead in soil at the site which will result in the removal of all co-located contaminants including arsenic and chromium. At no point will soil be remediated to a concentration below the established background concentration for any of the metals.

5. ***The board notes that the OSWER "Guidance on Remedial Actions for Superfund Sites with PCB Contamination" (EPA/540/G-90/007, August 1990) identifies a preliminary remediation goal of 1 ppm for residential clean ups, and that this level has been used as a final remediation level for many residential properties addressed under CERCLA. In this case, the region/state are proposing a cleanup level of 0.5 ppm PCBs. Based on the information provided in the package, the rationale for this level is unclear. The board recommends that the region/state provide a clear explanation and rationale for its proposed cleanup level along with references to the appropriate guidances in the site decision documents.***

In determining the appropriate cleanup levels for the site, EPA considered the above-referenced guidance document. Page 28 of the guidance states, "For Superfund sites, the risk remaining after remediation should generally fall within the range of 10^{-4} to 10^{-6} individual excess cancer risk. Based on the standard exposure assumptions associated with residential land use (ingestion, inhalation, and dermal contact), concentrations of 0.1 ppm PCBs to 10 ppm PCBs will generally fall within the protective range." The guidance further suggests that a concentration of 1 ppm PCBs be used as "the starting point" for residential scenarios, which "equates to approximately a 10^{-5} excess cancer risk assuming no soil cover or management controls." However, the guidance also assumes that PCBs are the only contaminant of concern.

Nine contaminants of concern (COCs) were identified in soil to exceed EPA's target risk range (i.e., cancer risk exceeds 1×10^{-4} or hazard quotient is greater than 1). The primary risk drivers in soil, based on toxicity and frequency of detection, are PCBs and lead. Twenty-six COCs, primarily VOCs, but also PAHs, metals and pesticides, were identified in groundwater to exceed EPA's target risk ranges. The large number of COCs and the

likelihood of exposure to both soil and groundwater were considered in setting the PRGs for contaminants in soil at the "point of departure" risk level of 1 x 10^{-6} cancer risk. The cumulative risk of exposure to both soil and groundwater was considered in the baseline human health risk assessment. Consistent with the National Contingency Plan (Vol. 55, No. 46, Pg, 8713, March 8, 1990), these pathways were summed based on the fact that a future resident could potentially be exposed to all pathways (ingestion, dermal absorption and inhalation) across both affected media. Based on the likelihood that a future resident would be exposed to both soil and groundwater (as the only available drinking water supply), EPA, the New Hampshire Department of Environmental Services (DES) and the New Hampshire Department of Health and Human Services (DHHS) determined that this approach, while conservative, is appropriate for the Beede Waste Oil Site.

The proposed cleanup level of 0.5 ppm does fall within the expected protective range consistent with the above-referenced guidance. Standard risk assumptions, consistent with residential land use, were evaluated to determine a protective level of residual risk. Consequently, the recommended preliminary remediation goal of 1.0 ppm total PCBs s would not be protective at Beede.